

Application No. 10/771,391
Response dated November 2, 2004
Reply to Office Action of August 10, 2004

REMARKS

Objection to Drawings

The drawings are objected to because Figures 5A-5C are not designated by a legend such as --Prior art--.

Figures 5A-5C has been hereby amended to overcome this objection.

Request to Review the Specification

The Examiner requested Applicants' cooperation in correcting errors in the specification. The specification has been reviewed, and no errors requiring correction have been found.

Rejections under 35 USC §102(b)

Claims 1, 3, 6 and 7 are rejected under 35 USC §102(b) as being anticipated by Panicker (U.S. Patent No. 5,089,881). In so doing, the Examiner alleged as follows:

Panicker shows the method as claimed . . . , wherein via holes 12 are made in an alumina sheet which contacts underlying electrodes (column 2, lines 18-67; column 3, lines 1-55). First and second conducting pastes are placed in the via holes and heated (column 4, lines 54-67; column 5, lines 1-60). Heating is performed after each metal is placed in the via (column 4, lines 54-67; column 5, lines 1-42). The second component contains Cu.

Claim 1, as amended, recites as follows:

A method of manufacturing a semiconductor device comprising, in the recited order, the steps of:

forming an insulating film on a surface of a semiconductor element or a circuit wiring board having electrodes on the surface thereof;
forming openings in the insulating film by patterning the insulating film and then removing portions of the insulating film above the electrodes;
supplying a first metal into the openings;
heating the first metal to melt and coagulate the first metal;
supplying a second metal into the openings on the first metal;
heating the first metal and the second metal **to melt and coagulate the first metal and the second metal;** and
removing the insulating film.

As shown in Fig. 2a of Panicker, the alumina sheet is not formed on a surface of a semiconductor element or a circuit wiring board. Thus, Panicker does not teach or suggest **“forming an insulating film on a surface of a semiconductor element or a circuit wiring board having electrodes on the surface thereof.”**

As described at column 4, lines 63 and 64 of Panicker, the first paste 16 is made of tungsten particles and a binder. As described at column 5, lines 3-10, by heating for sintering, the binder on the paste 16 burns off and a porous mass of sintered tungsten 19 is left. Thus, the tungsten which the Examiner corresponds as the “first metal” is not melted according to Panicker.

Therefore, Panicker does not teach or suggest “heating the first metal to **melt** and coagulate the first metal.”

As described at column 5, lines 21-38 of Panicker, second paste 21 made of copper particles with a binder is supplied and the substrate card is heated. By the heating the binder of the copper paste 21 is burned off and the copper particles are heated to a molten mass which

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enables the copper to be infiltrated. Here, although copper is melted, tungsten is not melted. Therefore, Panicker does not teach or suggest “heating the first metal and the second metal to melt and coagulate the first metal and the second metal.”

Also, the alumina sheet is not removed, thus, Panicker does not teach or suggest “removing the insulating film.”

The MPEP 2131 explains anticipation as follows:

TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). . . . See also MPEP § 2131.02.< “The identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an ipsissimis verbis test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990). Note that, in some circumstances, it is permissible to use multiple references in a 35 U.S.C. 102 rejection. See MPEP § 2131.01.

Panicker fails to teach so many elements of claim 1 as discussed above.

For at least these reasons, claim 1 patentably distinguishes over Panicker. Claims 3, 6 and 7, depending from claim 1, also patentably distinguish over Panicker for at least the same reasons.

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Rejections under 35 USC §103(a)

Claims 2, 4, 5 and 8 are rejected under 35 USC §103(a) as being obvious over Panicker (U.S. Patent No. 5,089,881) in view of Fukunaga et al (U.S. Patent No.6,730,596), and further in view of Sakuyama (U.S. Patent No. 6,524,943).

Fukunaga et al is cited for allegedly disclosing that Bi may be used in a similar process. Sakuyama is cited for allegedly disclosing using a resist pattern to form a mask for depositing a metal paste. Such disclosures of Fukunaga et al and Sakuyama do not remedy the deficiencies of Panicker discussed above.

For at least these reasons, claims 2, 4, 5 and 8, depending from claim 1, patentably distinguish over Panicker, Fukunaga et al and Sakuyama.


In view of the aforementioned amendments and accompanying remarks, Applicants submit that that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP

A handwritten signature in black ink, appearing to read "Sadao Kinashi". The signature is fluid and cursive, with a large initial 'S' and a stylized 'K'.

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Amendments to the Drawings:

The attached sheet of drawings includes changes to Figures 5A-5C. This sheet, which includes Figures 5A-5C, replaces the original sheet including Figures 5A-5C. The legend "Prior Art" has been added to each of Figures 5A-5C.